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### (54) Vehicle door handle

(57) A handle (1) for a vehicle door has a connecting member (2) which is connected integrally to the door; a movable control member (3) connected to the connecting member (2) and operated manually by a user to control, in use, a lock on the door; a through seat (7) formed in the movable member (3) and having an inlet opening (8) and an outlet opening (9); a user-recognition detecting element (10) housed inside the seat (7) through the inlet opening (8), and having electrical

wiring (14) projecting outwards through the outlet opening (9); and a supporting member (11) for supporting the detecting element (10) and inserted inside the seat (7) through the inlet opening (8); the supporting member (11) having supporting (13) and retaining (31) members for releasably retaining at least a portion of the wiring (14) during insertion of the supporting member (11) inside the seat (7).

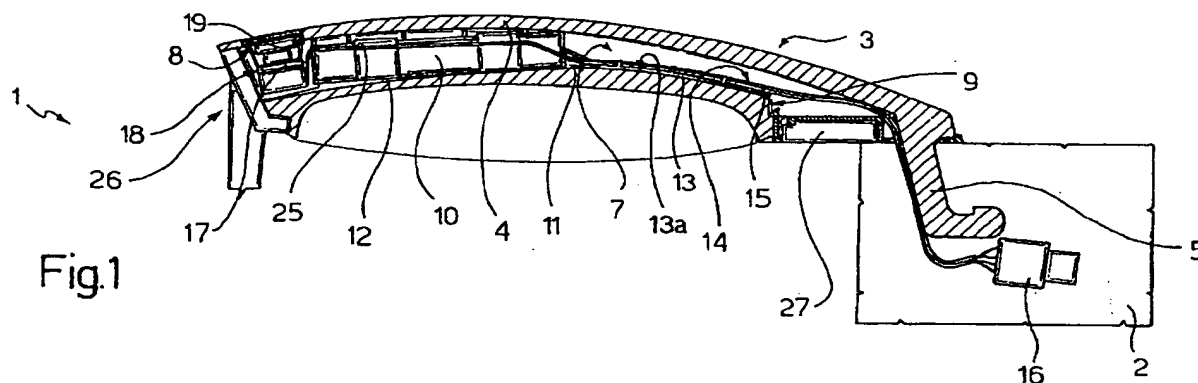


Fig.1

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## Description

[0001] The present invention relates to a vehicle door handle.

[0002] More specifically, the present invention relates to a handle of the type comprising a connecting structure for connection to the vehicle door; a lever hinged to the connecting structure and activated, in use, by the user to open a lock on the door; and a pickup aerial housed inside the lever to read a user identification code.

[0003] In most applications, the lever is formed, normally molded, in one piece, and has a seat for the aerial, which is inserted inside the seat through an opening formed in the lever and closed by a cover with the interposition of seals and/or the formation of labyrinth seals.

[0004] The aerial has its own wiring, which extends through the lever and is connected to wiring on the door by means of an electrical connector.

[0005] To the door wiring is also connected, by means of a connector, the wiring, extending inside a conduit formed in the lever, of a switching device, e.g. for electrically connecting/disconnecting the lock safety device.

[0006] In handles of the above type, the aerial, the switching device and the respective wiring inside the handle are extremely difficult and awkward to assemble and disassemble, on account of the geometry of the conduits imposed by manufacturing and design requirements. As a result, assembly is a particularly time-consuming job, sometimes resulting in partial, and hence undetected, damage to the wiring.

[0007] It is an object of the present invention to provide a vehicle door handle designed to provide a straightforward, low-cost solution to the above problems.

[0008] According to the present invention, there is provided a handle for a vehicle door, comprising a connecting member which is connected integrally to said door; a movable control member connected to said connecting member and operated manually by a user to control, in use, a lock on said door; a through seat formed in said movable member and having an inlet opening and an outlet opening; and user-recognition detecting means housed inside said seat through said inlet opening, and comprising first electrical wiring projecting outwards through said outlet opening; said handle being characterized by also comprising a supporting member for supporting said detecting means and inserted inside said seat through said inlet opening; said supporting member comprising first supporting and retaining means for releasably retaining at least a portion of said first wiring during insertion of said supporting member inside said seat.

[0009] The resulting handle therefore enables the wiring to be threaded easily by a fitter through the outlet opening in the handle.

[0010] A non-limiting embodiment of the present

invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a section of a preferred embodiment of the handle according to the invention;

Figure 2 shows an exploded view of the Figure 1 handle;

Figure 3 shows a larger-scale section of a detail of the Figure 1 handle;

Figure 4 shows a section of a variation of a detail of the Figure 1 handle.

[0011] Number 1 in Figure 1 indicates a handle for controlling a vehicle door lock (not shown). Handle 1 comprises a connecting body 2 for connection to the vehicle door (not shown); and a lever 3 for normally operating the lock.

[0012] Lever 3 comprises a user grip portion 4; and a lateral portion 5 extending crosswise to portion 4 and inside connecting body 2, and which is hinged to connecting body 2 to rotate about a hinge axis.

[0013] Grip portion 4 is hollow, and defines internally a through seat 7 having an inlet opening 8 at the opposite end of portion 4 to portion 5, and an outlet opening 9 adjacent to portion 5. Seat 7 houses a known pickup aerial 10 (not described in detail) for reading a user-identification code, and an elongated, substantially rectangular frame 11 for supporting and moving the aerial, and comprises a portion 12 for housing aerial 10, and an end portion 13 defining a surface projecting from and substantially aligned with portion 12, and having a free end close to opening 9.

[0014] Aerial 10 is connected to a known processing and control unit (not shown) by wiring 14 comprising a number of cables 15, which extend through seat 7, where they are supported by portion 13, and come out of the grip portion through opening 9, where they are connected to an electrical connector 16.

[0015] More specifically, portion 13 comprises a surface 13a for supporting wiring 14; and a number of tabs or appendixes 31 for retaining wiring 14 during assembly, and releasing the wiring during connection.

[0016] Lever 3 also supports a pushbutton switch 17, e.g. for connecting and/or disconnecting the lock safety device. The switch is housed inside a seat 18 formed inside lever 3, close to inlet opening 8, and communicating with the outside via a lateral opening 19 in lever 3.

[0017] As shown, particularly in Figure 3, switch 17 is connected to the lever by a tubular body 20 clicked into seat 18 and defining a cavity 21 in which slides a body 22 activated manually from the outside to operate switch 17. Body 22 is maintained in a withdrawn position by a spring 23 compressed between tubular body 20 and body 22 itself.

[0018] Switch 17 is connected to the unit by wiring 24 comprising a number of cables 25, which extend through seat 7, where they are also supported by por-

tion 13 of frame 11, in particular on surface 13a and by means of tabs 31, and come out through opening 9, where they are connected to electrical connector 16.

[0019] Inlet and outlet openings 8 and 9 of seat 7 are closed in fluidtight manner by a first and a second closing member 26 and 27 respectively; member 26 being substantially L-shaped and comprising a first portion 28 for closing opening 8, and a second connecting portion 29 fixed to lever 3 by a screw 30.

[0020] In the Figure 4 variation, opening 19 communicates with a longitudinal channel 32 for insertion of tubular body 20 and formed in a free end portion of the lever externally defining seat 7.

[0021] In actual use, the handle according to the invention is assembled (Figure 2) by placing aerial 10 on portion 12 of frame 11; appropriately arranging and securing wiring 14 onto surface 13a of portion 13 by means of tabs 31; and then arranging and securing wiring 24 of switch 17, also onto surface 13a by means of tabs 31.

[0022] At this point, the whole formed by aerial 10 and supporting frame 11 is inserted inside seat 7 through inlet opening 8; switch 17 is inserted inside seat 18; opening 8 is closed by closing member 26; and wirings 14 and 24 are recovered easily through outlet 9, by cables 15 of aerial 10 and cables 25 of switch 17 being supported on portion 13 of frame 11 close to outlet opening 9.

[0023] The cables can therefore be gripped easily by a fitter and threaded through outlet opening 9 for connection to electrical connector 16. Once the wires are connected, outlet opening 9 is closed by closing member 26.

[0024] If the lever has a longitudinal channel for inserting tubular body 20, the second embodiment of the handle (Figure 4) is even easier to assemble, by switch 17 also forming part of the preassembly comprising aerial 10 and frame 11 supporting part of wirings 14 and 24, so that switch 17 is slid along the channel into seat 18.

[0025] Clearly, changes may be made to the handle as described herein without, however, departing from the scope of the accompanying Claims. For example, frame 11 may be formed or located otherwise than as described, without compromising the object of the invention; the handle according to the invention may comprise no switches; and the wiring may be secured to the frame otherwise than as described.

## Claims

1. A handle (1) for a vehicle door, comprising a connecting member (2) which is connected integrally to said door; a movable control member (3) connected to said connecting member (2) and operated manually by a user to control, in use, a lock on said door; a through seat (7) formed in said movable member (3) and having an inlet opening (8) and an outlet

opening (9); and user-recognition detecting means (10) housed inside said seat (7) through said inlet opening (8), and comprising first electrical wiring (14) projecting outwards through said outlet opening (9); said handle (1) being characterized by also comprising a supporting member (11) for supporting said detecting means (10) and inserted inside said seat (7) through said inlet opening (8); said supporting member (11) comprising first supporting and retaining means (13, 31) for releasably retaining at least a portion of said first wiring (14) during insertion of said supporting member (11) inside said seat (7).

2. A handle as claimed in Claim 1, characterized in that said movable member (3) is fitted with electrical switch-operated control means (17); said control means (17) comprising second wiring (24); and second supporting and retaining means (13, 31) being carried by said supporting member (11) to releasably retain said second wiring (24) at least during insertion of said supporting member (11) inside said seat (7).

3. A handle as claimed in Claim 2, characterized in that said first and second supporting means comprise an elongated member (13) partly engaging said seat and having a free end adjacent to said outlet opening (9).

4. A handle as claimed in Claim 3, characterized in that said elongated member (13) comprises a flat surface (13a) for supporting at least one of said wirings (14, 24).

5. A handle as claimed in Claim 4, characterized in that said elongated member (13) carries a number of deformable appendixes (31) for retaining at least one of said wirings (14, 24) on said supporting surface (13a) during insertion of said supporting member (11) inside said seat.

6. A handle as claimed in Claim 5, characterized in that said supporting member (11) comprises a structure (12) for supporting said detecting means (10).

7. A handle as claimed in Claim 6, characterized in that said structure (12) and said elongated member (13) extend in line with each other.

8. A handle as claimed in any one of Claims 2 to 7, characterized by comprising a single said seat (7) for housing said supporting member (11), the respective detecting means (10), and said electrical control means (17).

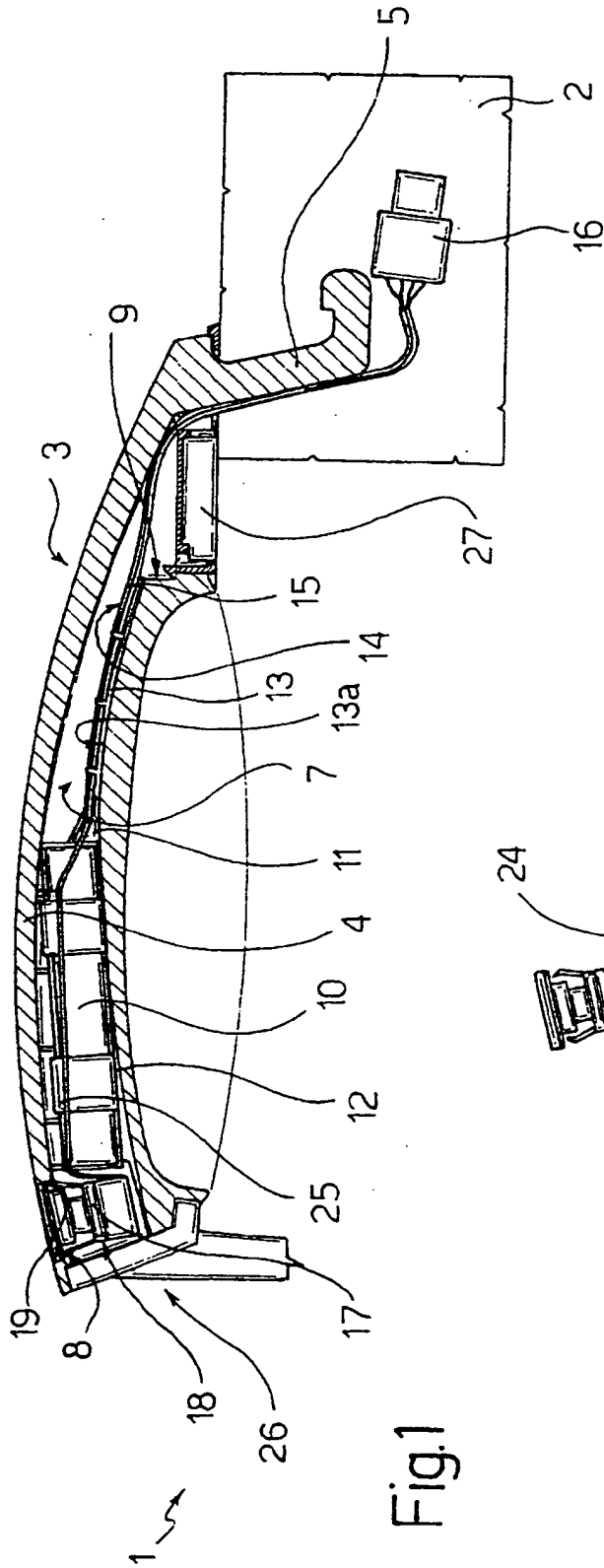


Fig.1

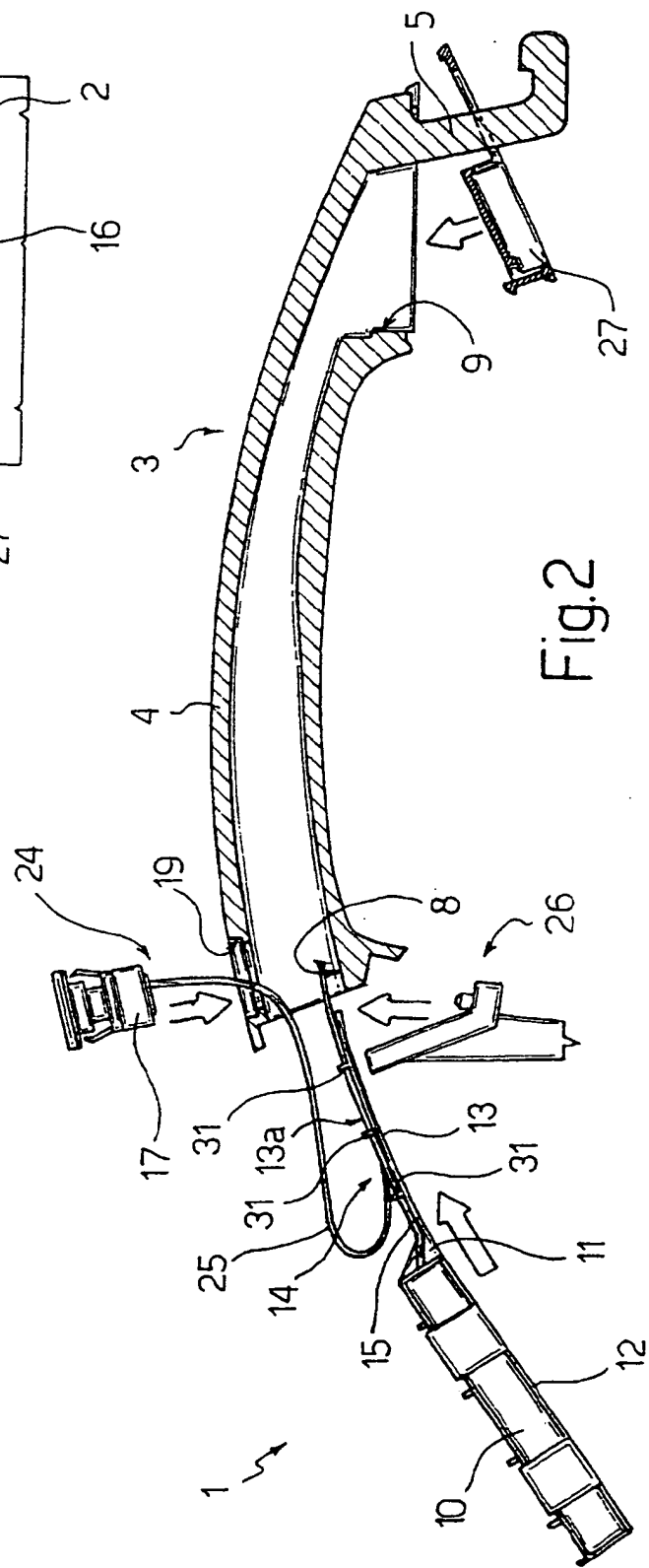
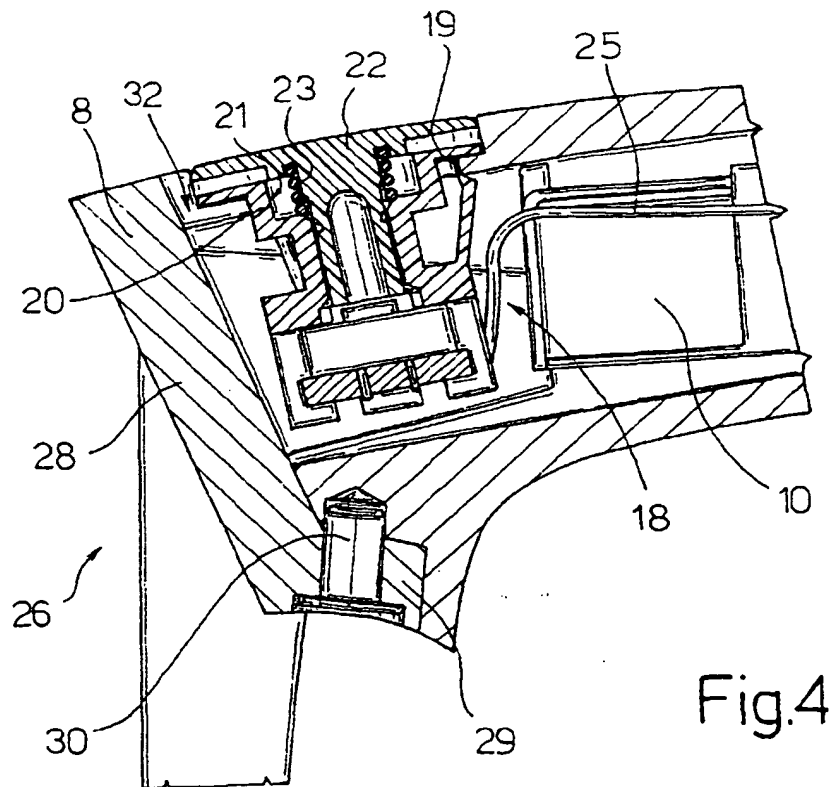
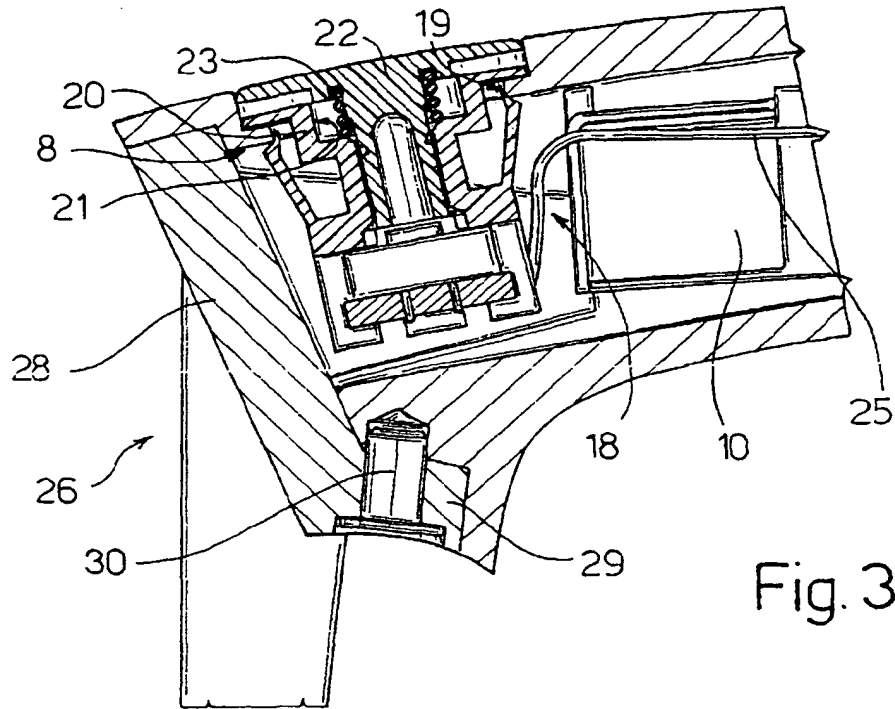


Fig.2





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# EUROPEAN SEARCH REPORT

Application Number

EP 00 11 4456

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	DE 42 12 291 A (MERCEDES-BENZ AG) 14 October 1993 (1993-10-14) * column 2, line 52 - column 3, line 18; figure 1 *	1	E05B7/00 E05B49/00
A	WO 99 19585 A (HUF HÜLSBECK & FÜRST GMBH & CO KG; KEMMANN HARALD; LANGE STEFAN) 22 April 1999 (1999-04-22) * page 5, paragraph 3 - page 6, paragraph 2; figures 1,2 *	1	
A	WO 99 28170 A (MODI JAYESH JAYANTILAL ; ROBERT BOSCH GMBH ) 10 June 1999 (1999-06-10) * page 9, line 24 - page 10, line 28; figures 7-11 *	1,2	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E05B
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>16 October 2000</b>	Examiner <b>PEREZ MENDEZ, J</b>
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1803 05.02 (P0101)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 11 4456

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16-10-2000

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